

## Proceedings of the New York Entomological Society

(Meetings held in Room 129 of the American Museum of Natural History unless otherwise indicated)

MEETING OF MAY 19, 1964

President Rozen presided; 25 members and 8 guests were present. Dr. Kumar Krishna of the Biology Dept. of City College was proposed for membership and Mr. Bernard Gross, a student at City College, was proposed for Student Membership. It was approved to suspend the Bylaws and allow the voting on these proposals so as not to hold them over the summer. Dr. Krishna and Mr. Gross were unanimously elected to the Society. Dr. Rozen announced the death of Mrs. Herbert Schwarz. The Secretary was instructed to send the condolence of the Society to the Schwarz family. Dr. Forbes made his report as the Society representative to the Conference of Biological Editors which was held at the University of Michigan on May 11 and 12. Dr. Rozen read a newspaper clipping on the use of fruit flies in space biology. Dr. Clausen showed a few recently published books, including two which were illustrated by Su-Zan Swain, and Dr. Roman Vishniac displayed an early book by Francesco Redi. Mrs. Alice Hopf asked members for living material of the Viceroy butterfly. Miss Alice Gray noted that the mantis egg case, mentioned at a previous meeting, had produced 25 young over a period of 1 month.

PROGRAM. **Nests of Termites** by Dr. Kumar Krishna. His talk was illustrated with slides: an abstract follows. After the formal presentation, the speaker showed a film of various nests and colonies in the Ivory Coast.

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### Nesting Habits of Termites

The termite and the roach probably arose from a common ancestor having membranous wings. The closest living relative of the termite is the subsocial, wood-eating wingless roach, *Cryptocercus punctulatus* Scudder. This roach and the four primitive families of termites harbor a number of species of cellulose digesting flagellate protozoa in the hind gut, without which they cannot live.

Five living families of termites are known. Mastotermitidae, the most primitive, has only one species, living today in Australia. Kalotermitidae and Hodotermitidae probably arose from a *Mastotermes*-like ancestor. Rhinotermitidae evolved from *Hodotermitidae*. Termitidae apparently have developed from a Rhinotermitidae.

The wood-dwelling and wood-eating habits found in the roach *Cryptocercus punctulatus* and in the termites belonging to the family Kalotermitidae and the subfamily Termopsinae (family Hodotermitidae) represent primitive nesting conditions. Mastotermitidae, though morphologically primitive, has nesting habits that are more advanced than those of Kalotermitidae. The Mastotermitidae nest is subterranean, and the colony contains about a million wood-eating individuals.

Hodotermitinae belonging to the family Hodotermitidae show an advance over Termopsinae, in that they are harvesters and feed largely on grass. The workers have pigmented compound eyes and go out on foraging excursions, bringing back bits of grass, which they store in the nest. The nest is in excavated chambers under the surface of the earth and is made of earth, saliva, and fecal carton.

Some genera of Rhinotermitidae (e.g., *Reticulitermes*) make subterranean nests, consisting of excavations and passageways in soil. Other genera construct earthen mounds: for example, *Coptotermes* of Australia.

Of the family Termitidae, Amitermitinae build all kinds of nests, subterranean, arboreal, and mounds. *Amitermes excellens*, from the rain forests of British Guiana, builds earth carton nests on the sides of tree trunks. The exterior of these nests is covered by nu-

merous finger-like projections, extending downward and outward, which serve as rain-shedding devices. This kind of adaptation has evolved independently many times.

Members of the subfamily Termitinae are generally humus feeders and make a variety of nests, both above and below the ground.

All members of the subfamily Macrotermitinae grow fungus gardens, covered with white conidial spheres, which are probably used as food.

Some species of the family Nasutitermitinae are earth-nesting humivores, some are harvesters, and some make arboreal nests.

KUMAR KRISHNA

#### MEETING OF OCTOBER 6, 1964

President Rozen presided; 21 members and 11 guests were present. Dr. Clausen announced that she is interested in receiving short papers or notes, especially items of general biological interest, for the *Journal*. Dr. Rozen mentioned that he had received a tentative revision of the Constitution of the Society from the committee appointed for that purpose.

**PROGRAM. Summer Activities of the Members.** Drs. Ruckes and Rozen attended the International Congress of Entomology in London; Mr. Lucien Pohl, Mr. and Mrs. Bernard Heineman, Mr. John Pallister, and Miss Ann Birdsey made extensive trips to various parts of the world. Specimens were shown which included a rare Patagonian lucanid (Coleoptera) by Dr. Nicholas Kormilev, local and Bulgarian Coleoptera by Mr. John Stamatov, gynandromorphs of the gypsy moth and luna moth by Dr. Asher Treat. Paintings of caterpillars and butterflies were shown by Dr. Henry Taabor. Mr. Samuel Ristich mentioned his work at E. R. Squibb & Co. on insect tissue culture for use in later work on viruses. He noted about 92% parasitism of the tobacco hornworms collected in the wild, and these are parasitized with braconids (Hymenoptera). Dr. Clausen mentioned that the Junior Society had made a trip to the Pine Barrens at the end of June. Dr. Rozen showed slides of the area in Switzerland where he had collected adults and larvae of the bee genus *Melitturga*.

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#### MEETING OF OCTOBER 20, 1964

President Rozen presided; 26 members and 14 guests were present. Mrs. Mary Karpel, a graduate student at Rutgers, was introduced as a guest. Miss Alice Gray announced that the Junior Society held its first meeting of the year 2 weeks previously. It has its full quota of 15 members and a waiting list of 4. Five of the former members started college this fall. She asked for ideas and places for this group to visit and for volunteer speakers. Mr. Joseph Muller, Treasurer of the Newark Entomological Society, was proposed for membership and Mr. Donald Procaccini, a graduate student at Fordham, was proposed for Student Membership. Dr. Henry Taabor commented briefly on the ability of monophagous caterpillars to feed on plants other than those commonly used. He displayed his painting of a swallowtail caterpillar. Mr. Robert Buckbee showed some scale insects and asked for information about them.

**PROGRAM. Confined Mating in the Honeybee** by Dr. Toge Johansson of Queens College. Bee breeders are very anxious to obtain controlled or confined matings, but up to now none of the attempts have been successful. The queen apparently mates 7-10 times on the nuptial flight. Slides and films were shown of an attempt made at Cornell University in which queens were tethered by a fine thread attached to a wire extending 40 feet above ground. This represents one of the few times mating has been observed and, with one possible exception, the only time it has been recorded on film. Large swarms of drones were attracted to the queens. Drones were also attracted to extracts of whole queens or of queen mandibular glands which were placed on filter paper and similarly tethered in the air. Occasionally, workers were attracted to these substances and they were then followed by some drones when they left the area. After mating, workers assist the queen to remove the genitalia of the drones, which have been pulled from the males, and are still attached to the queen.

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